

IN THE CLAIMS:

This listing of claims replaces all prior versions or listings of claims in this application:

1. (Currently Amended) A process for the preparation of biodiesel, ~~having a Cetane number in the range of 45-67 and total nitrogen content in the range of 0.03—0.033%~~ comprising:

i) heating an oil having a specific gravity in the range of 0.85-0.96 and an iodine value not exceeding 208, to a temperature not exceeding 120°C for not less than 2 hours;

ii) transesterifying the oil with 8 to 42% w/w of alcohol of general formula R-OH, where R represents (C_nH_{2n+1}), wherein n is an integer from 1 to 5, in presence of not more than 0.55% w/w, of a catalyst, at a temperature higher than the boiling point of the alcohol but not exceeding 215°C for a period of not less than 30 minutes under continuous turbulent conditions to obtain a mixture of ester and glycerol,

iii) separating the esterified oil from the mixture for a period of not less than 4 hours;

iv) purifying the mixture for a period of not less than 8 hours, wherein the purification step involves bubble washing; and

v) repeating steps iii) and iv) in succession for not less than three times to obtain a biodiesel, ~~having a Cetane number in the range of 45-67 and total nitrogen content in the range of 0.03—0.033%~~

wherein the biodiesel is capable of exhibiting an NO_x emission reduction value in the range of 10-55%, when used alone without engine modification.

2. (Previously Presented) The process of claim 1, wherein the oil is selected from the group consisting of ricebran oil, cottonseed oil, soybean oil, sunflower oil, castor oil, and coconut oil.

3. (Previously Presented) The process of claim 1, wherein the alcohol is selected from the group consisting of methanol, ethanol, n-propanol, n-butanol, and n-pentanol.

4. (Previously Presented) The process of claim 1, wherein the catalyst is sodium hydroxide or potassium hydroxide.

5. (Previously Presented) The process of claim 1, wherein the separation step involves decanting, centrifuging, gravity separation, settling, or a combination thereof.
6. (Previously Presented) The process of claim 1, wherein the purification step additionally involves centrifuging, or a combination thereof.
7. (Previously Presented) The process of claim 1 wherein the continuous turbulent conditions are maintained at a Reynolds number (NRe) ranging from 4000 to 10,000.
8. (Previously Presented) The process of claim 1, wherein the bubble washing involves bubbles having a bubble size ranging from 1-3 mm.
9. (Previously Presented) The process of claim 6, wherein the pore size of the filter in the micro filtration is not less than 5 micron.